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Review Article

Current status of various treatment modalities in the management of Fissure-in-ano

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ABSTRACT

Fissure-in-ano is a tear in the skin around the distal anal canal below the level of the dentate line, overlying the lower half of the internal sphincter. It is characterized by pain at defecation, burning, itching, and streaks of fresh red blood over a hard stool. It is mainly managed by relaxing the anal sphincter in addition to the use of stool softeners, local anesthetic, and intake of high dietary fibers.

Chemical sphincterotomy agents act as pain relievers by relaxing the internal sphincter and are available mainly in ointment forms including nitrates and calcium channel blockers. Besides these, surgical treatment is intended in the patients who fail to respond by other methods. The surgical methods include Internal sphincterotomy, Fissurectomy, Lord's procedure, and other such methods, which are discussed briefly in this article.

1. Introduction

Fissure-in-ano is a longitudinal tear or split in the skin covering the distal anal canal, below the level of the dentate line, overlying the lower half of the internal sphincter. It is characterized by pain at defecation, burning, itching, and streaks of fresh red blood over a hard stool.[1] It can be acute fissure (<6 weeks duration) or chronic with secondary changes such as sentinel tag and hypertrophic papilla (>6 weeks duration).[2]

Management is based upon the presenting features and the chronicity of the disease. Fissures with specific causes such as IBD, TB, CA, etc. are dealt as per their etiology. Various options ranging from conservative approach to surgical management are described in the literature with their indication, complication, and results explained.

2. Conservative measures

They aim at relieving pain by relaxing the anal sphincter and include stool softeners, sitz bath, and local anesthetic. 80% of the acute fissures respond well to these measures itself. High dietary fiber intake as maintenance therapy has shown to decrease recurrence rates.[3] Recurrence ranges from 30% to 70% if the high fiber diet is abandoned after fissure is healed. This rate is reduced to 15–20% if the patient remains continuously on high fiber diet. Hence, lifelong dietary modification is recommended. Warm water sitz baths promote healing by soothing the area and aid in relaxing the sphincter.[4] Application of local anesthetic agents like Lignocaine Cream before the act of defecation and after it helps in relieving pain.[5] Antibiotics, antiamoebic and anthelmintics are prescribed in the case of infections. Conservative

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therapy is safe, has few side effects, and should usually be the first step of therapy.

3. Chemical sphincterotomy agents

They relieve pain by relaxing the internal sphincter and aid in the improvement of the local blood supply. They are available mainly in local ointment forms and include nitrates and calcium channel blockers. The healing rate described varies from 70 to 90% for different agents with acceptable side effect, the greatest advantage being preservation of the sphincter. They are, therefore, the modality of choice in patients where above conservative management fails before subjecting them to surgery. They can be used along with conservative management if the fissure is seen as progressing toward chronicity.

a) Topical nitroglycerine (local application) is a nitrate donor and a vasodilator which relieves the spasm by release of Nitric Oxide from Glycerol Trinitrate metabolism at cellular level and improves local blood supply.[6] It is available in both 0.2% and 0.4% concentrations and applied 2–3 times per day with a gloved finger for 8 weeks. With healing rates of 70–80%, it also decreases the recurrence rate by 50% compared to placebo.[7] Increase in dose or method of application has not shown to improve the healing rate.[8] Headache is the main side effect, which limits its use. Other effects are rebound hypertension, syncope, crescendo angina, and allergic dermatitis.
b) Topical calcium channel blocker (diltiazem 2%) applied twice a day for 8 weeks has shown healing rate of 88% with lesser side effects as compared to GTN,[9] which include headache, drowsiness, mood swings, and perianal itching. Oral diltiazem 60 mg has been found to be inferior to topical diltiazem (38%) with more side effects.[10]
c) Topical nifidepine (0.3%), also a calcium channel blocker, has shown healing in 94.5% cases. Oral nifidepine (20 mg twice a day for 6 weeks) shows lesser healing rate and higher side effects.[11]
d) Topical Bethenecol 0.1% application locally has shown to heal fissures in up to 60% without side effects.[12]
e) Botulinium toxin, an Acetyl Choline inhibitor, paralyzes the muscles thereby relieving the spasm. 10–100 units are injected on either side of fissure and/or in the bed of fissure in the internal sphincter.[13] The exact dose, the number of repetitions, and the precise site are still debatable. Success rate of 60–80% has been reported after 2 months.[14] It rises to 100% after 2nd injection.[15] It can be done on an outpatient basis. Side effects such as heart block, skin allergy, increased residual urine, muscle weakness, postural hypotension with fluctuations in heart rate and blood pressure, and transient incontinence in 10% patients are described.
f) Topical Sildenafil, a Phospodiasterase-5 (PDE5) inhibitor is available as 0.75 ml of 10% cream (75 mg) applied to anal canal from 1 ml pre-loaded syringe. Side effects are transient itching and burning in perianal area.

4. Surgical management

It is indicated in patients who fail to respond or recurs after initial healing, those with severe unbearable pain, and the ones with complications or secondary changes. It ensures immediate relief and eliminates need for any further treatment. The main principles of fissure surgery are relieving of Internal Anal Sphincter spasm, reducing Maximum Anal Resting Pressure, correction of ischemia, and ulcer healing. Closed lateral sphincterotomy is presently the gold standard amongst various procedures described in the literature.

4.1. *Internal sphincterotomy*

Division of the hypertrophied internal anal sphincter to release the spasm is done laterally in the right or the left quadrant depending on the comfort and handedness of the surgeon. Both closed and open methods are described without any significant difference in outcome,[16] as far as the healing rate and incontinence are concerned. The open variety takes slightly longer time for surgery. Better done under general anesthesia for better assessment of sphincters, the individuals who undergo this surgery under local anesthesia show faster recovery but with higher incidence of recurrence.[17,18] The posterior midline position to divide the sphincter at the base of the fissure is better avoided to eliminate the chance of a keyhole deformity with its consequences in 30% of the patients. The lower 1/3 of the internal sphincter is cut below the level of the dentate line, at a position between 3 and 5 o'clock. Evidence is split between classical long sphincterotomy (up to dentate line) against tailored conservative sphincterotomy (up to the upper limit of the fissure).[19] The sentinel tag and the polyp, if significantly large, may be excised, as the chance of spontaneous regression of the same in such cases is feeble. Lateral Internal sphincterotomy results in pain relief in 99% of the patients with a recurrence rate of 3%. The resultant incontinence is 6% for flatus and 1% for feces.[20–22] The other complications of lateral anal sphincterotomy are infections (1–2%), fistule (1%), echymosis, and hematoma. LIS is superior to posterior midline sphincterotomy with faster healing, less pain, and less risk of incontinence.[23]

4.2. *Fissurectomy*

Fissurectomy to excise the sentinel tag and hypertrophy papillae along with the chronically indurate edges of the non-healing wound alone leads to a large uncomfortable external wound, which takes nearly 4–6 weeks to heal. It should be always combined with a lateral sphincterotomy avoiding it at the tempting base for reasons described above.[23]

4.3. *Anal dilatation or stretch (Lord's procedure)*

The simplest of anal fissure surgery requiring no special gadgets and still popular among many general surgeons is actually condemned now for the high rate of incontinence 12–27% of patients[24] and other complications such as bleeding, perianal bruising, strangulation of prolapsed hemorrhoids,